This amendment responds to the office action mailed June 13, 2006. In the office action the Examiner:

- rejected claims 1, 13, 22 and 34 under 35 U.S.C. 103(a) as unpatentable over McCrady et al. (US 6,665,333) in view of Heath et al. (US 2002/0080735);

- rejected claims 19 and 40 under 35 U.S.C. 103(a) as being unpatentable over McCrady et al. (US 6,665,333) in view of Heath et al (US 2002/0080735), as applied to claims 13 and 34 above;

- rejected claims 20, 21 and 41 under 35 U.S.C 103(a) as being unpatentable over McCrady et al. (US 6,665,333) in view of Heath et al. (US 2002/0080735), as applied to claim 19 above, in further view of Eidson (US 6,278,710); and

- objected to claims 2-12, 14-18, 23-33, 35-39 as being dependent upon a rejected based claims;

After entry of this amendment, the pending claims are: claims 1-41.

Overview of Claim Changes

The term "relatively" has been replaced with "relative" in claims 1, 13, 22 and 34.

Detailed Response 35 U.S.C. 103(a)

In the present Office Action, the Examiner has rejected claims 1 and 22 as unpatentable over McCrady et al. (US 6,665,333) in view of Heath et al. (US Patent application publication No. 2002/0090735). The applicants disagree and traverse.

The claimed invention differs from McCrady in part by its use of the TDMA protocol, which assigns time slots for transmitted messages. The Examiner notes that while McCrady does not describe the use TDMA, TDMA is well known in the art, as evidenced by Heath. Thus, the Examiner argues, it would have been obvious to one skilled in the art to implement the McCrady system using TDMA.

However, the claimed invention is not simply an implementation of the McCrady system using TDMA. Instead, it differs fundamentally from the McCrady system in the way it determines transmission time between devices. The McCrady system uses a "two-way, round trip ranging message scheme" in which a master device sends a message to a second

device and measures how long it takes the second device to respond." See col. 4, line 62-col 5, line 10. The response time, minus the known turn-around time of the second device, determines the signal flight time between the two devices. The signal flight time in turn determines the distance between the two devices. Thus, the McCrady system only uses the clock of the master device, which is used to record both the time that the initial signal is sent and the time that the response is received.

In the claimed invention, <u>each device,</u> using its own local clock, determines the time of arrival of signals from other devices. For example, claim 1 includes the following:

> a plurality of devices, **each device including**:
> > a transceiver …
> > local clock for generating a local clock signal;
> > receiver logic for determining a time of arrival, relative
> > > to the local clock signal, of the message from
> > > each of the other devices; ...

This arrival time then is reported back to the other devices in subsequent transmissions, allowing the devices to calculate one-way flight times directly. Unlike in the McCrady system, the claimed invention does not measure round-trip flight times and does not subtract out turn-around times.

In claim 1, for example, the range is determined as a function of two quantities. These quantities are (A) "the determined time of arrival of the message from the other device" and (B) "the time of arrival information in the message from the other device." In the McCrady-Heath system, the first quantity, "the determined time of arrival of the message from the other device," is known to only one device in the entire system. In the claimed invention, however, all of the devices have "receiver logic for determining a time of arrival".

The second quantity, "the time of arrival information in the message from the other device," which is embedded in a transmitted message, is neither taught nor suggested by the McCrady-Heath system. The McCrady-Heath system is concerned only with the arrival time of the returning messages; the content of the messages is irrelevant. The claimed invention uses both the measured arrival time of messages and the information encoded in messages about the arrival times of previous messages at other devices. Because information about arrival times is transmitted between devices, the claimed invention does not require a known, fixed turn-around time, unlike in the McCrady system. For this reason alone, claim 1 and its dependent claims are patentable over McCrady-Heath.

In conclusion, the references in the cited combination, either alone or in combination, do not teach or suggest the limitations of each device using its local clock to measure arrival times and then transmitting that information to other devices to determine ranges between the devices. The claimed invention is not, therefore, *prima facie* obvious. Removal of this ground for rejection is requested.

In the present Office Action, the Examiner has rejected claims 13 and 34 as unpatentable over McCrady et al. (US 6,665,333) in view of Heath et al. (US Patent application publication No. 2002/0090735). The applicants disagree and traverse.

The above arguments regarding claims 1 and 22 apply to claims 13 and 34 as well.

In addition, claims 13 and 34 include the further limitation of synchronizing the local clocks of two or more devices. For example, claim 13 includes "clock synchronization logic ... for generating a steered clock signal that is approximately synchronized with a local clock in the other device." The Examiner elsewhere has recognized that clock synchronization distinguishes the claimed invention over McCrady. While the Examiner rejected claim 1, he stated that claim 4 would be allowable if rewritten in independent form. The only additional limitation in claim 4 is clock synchronization.

Furthermore, McCrady has no need for and does not teach clock synchronization. For example, McCrady states that its round-trip ranging technique eliminates "the need for highly accurate system clocks required in conventional time-synchronized systems." See col. 5, lines 12-13. McCrady further emphasizes that its system is not affected by clock drift, because "the system does not rely on synchronization of the clocks." See col. 10, lines 14-16.

McCrady only discusses clock synchronization in the context of prior art known as the Peterson system. The Peterson system is a one-way system that measures the arrival time of signals containing pseudorandom noise. See col. 2 line 34 – col. 3 line 28. McCrady describes Peterson's requirement of "precise time synchronization" as a "shortcoming" that the McCrady system avoids. See col. 3, lines 5-6, 22. Since the McCrady system uses an entirely different approach that explicitly avoids clock synchronization, the discussion of clock synchronization in the Peterson system cannot be combined with the teachings of the McCrady system as a basis for rejection – because the Peterson system and the McCrady system are incompatible, at least in this respect. The claimed invention is not, therefore, *prima facie* obvious. Removal of this ground for rejection is requested.

CONCLUSION

In light of the above amendments and remarks, the Applicant respectfully requests that the Examiner reconsider this application with a view towards allowance. The Examiner is invited to call the undersigned attorney at (650) 843-7501, if a telephone call could help resolve any remaining items.

Respectfully submitted,

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/ Gary S. Williams /   31,066

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